

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

AMENDMENTS TO THE CLAIMS

Claims 1-5 (Canceled)

6. (Currently amended) ~~The lift axle suspension system of claim 5 wherein~~ A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

a mounting bracket rigidly affixed to the frame member;

a first and a second articulating arm each having first and second ends, the first end of each articulating arm being pivotally attached to the mounting bracket, and the second end of each articulating arm being pivotally attached to the axle;

first and second diaphragm chamber assemblies each having therein a movable wall including a flexible bladder; the movable wall dividing the diaphragm chamber assembly into an upper chamber and a lower chamber; the upper chamber being adjustably pressurized to move the movable wall;

a push rod extending from each diaphragm chamber assembly for translating movement of the movable wall whereby the push rod is interconnected to the lift axle suspension system in a manner such that translated movement of the push rod causes pivotal movement of the articulating arms and axle attached thereto; and

a pivot arm pivotally connected to a distal end of each push rod;

the pivot arms are being pivotally connected together.

Claim 7 (Canceled)

8. (Currently amended) ~~The lift axle suspension system of claim 2 wherein~~ A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface, the vehicle

having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

a mounting bracket rigidly affixed to the frame member;

a first and a second articulating arm each having first and second ends, the first end of each articulating arm being pivotally attached to the mounting bracket, and the second end of each articulating arm being pivotally attached to the axle;

first and second diaphragm chamber assemblies each having therein a movable wall including a flexible bladder; the movable wall dividing the diaphragm chamber assembly into an upper chamber and a lower chamber; the upper chamber being adjustably pressurized to move the movable wall; the first diaphragm chamber is assembly being mounted in a pivotal manner while the second diaphragm chamber assembly is mounted in a fixed manner; and

a push rod extending from each diaphragm chamber assembly for translating movement of the movable wall whereby the push rod is interconnected to the lift axle suspension system in a manner such that translated movement of the push rod causes pivotal movement of the articulating arms and axle attached thereto.

9. (Currently amended) ~~The lift axle suspension system of claim 7 wherein~~ A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

a mounting bracket rigidly affixed to the frame member;

a first and a second articulating arm each having first and second ends, the first end of each articulating arm being pivotally attached to the mounting bracket, and the second end of each articulating arm being pivotally attached to the axle;

first and second diaphragm chamber assemblies each having therein a movable wall including a flexible bladder; the movable wall dividing the diaphragm chamber assembly into an upper chamber and a lower chamber; the upper chamber being adjustably pressurized to move the movable wall; the first diaphragm

chamber ~~is assembly being~~ rigidly mounted to ~~the~~ pivotally mounted first articulating arm, while the second diaphragm chamber ~~assembly~~ is rigidly mounted to the mounting bracket;

a push rod extending from each diaphragm chamber assembly for translating movement of the movable wall whereby the push rod is interconnected to the lift axle suspension system in a manner such that translated movement of the push rod causes pivotal movement of the articulating arms and axle attached thereto; and

a pivot arm pivotally connected to a distal end of each push rod; the pivot arms being pivotally connected about one of the pivotal attachments of the articulating arms to the mounting bracket.

10. (Currently amended) ~~The lift axle suspension system of claim 5 wherein~~ A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

a mounting bracket rigidly affixed to the frame member;

a first and a second articulating arm each having first and second ends, the first end of each articulating arm being pivotally attached to the mounting bracket, and the second end of each articulating arm being pivotally attached to the axle; the first and second articulating arms include including extensions extending beyond the arms ~~respective~~ pivotal connection of each arm to the mounting bracket and in a direction generally opposite the arm direction toward the axle connection, and where the first and second articulating arms are pivotally connected respectively via the extensions to the pivot a pivot arm;

first and second diaphragm chamber assemblies each having therein a movable wall including a flexible bladder; the movable wall dividing the diaphragm chamber assembly into an upper chamber and a lower chamber; the upper chamber being adjustably pressurized to move the movable wall;

a push rod extending from each diaphragm chamber assembly for translating movement of the movable wall whereby the push rod is interconnected to the lift axle suspension system in a manner such that translated movement of the push rod causes pivotal movement of the articulating arms and axle attached thereto.

11. (Currently amended) The lift axle suspension system of claim 10 wherein the first diaphragm chamber assembly is rigidly mounted to the mounting bracket while the second diaphragm chamber assembly is rigidly mounted to the pivot arm.

12. (Currently amended) ~~The lift axle suspension system of claim 2 further including~~ A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

a mounting bracket rigidly affixed to the frame member;

a first and a second articulating arm each having first and second ends, the first end of each articulating arm being pivotally attached to the mounting bracket, and the second end of each articulating arm being pivotally attached to the axle;

first and second diaphragm chamber assemblies each having therein a movable wall including a flexible bladder; the movable wall dividing the diaphragm chamber assembly into an upper chamber and a lower chamber; the upper chamber being adjustably pressurized to move the movable wall;

a push rod extending from each diaphragm chamber assembly for translating movement of the movable wall whereby the push rod is interconnected to the lift axle suspension system in a manner such that translated movement of the push rod causes pivotal movement of the articulating arms and axle attached thereto; and

a pivot arm with the first and second diaphragm chambers ~~chamber~~ assemblies connected thereto, while the push rod for the first diaphragm chamber assembly is pivotally connected to the mounting bracket and the push rod for the

second diaphragm chamber assembly is pivotally connected to one of the articulating arms.

13. (Currently amended) The lift axle suspension system of claim 12 wherein the first and second articulating arms include extensions extending beyond the ~~arms~~ pivotal connection of the articulating arms to the mounting bracket and in a direction generally opposite the articulating arm direction toward the axle connection, and where the first and second articulating arms are pivotally connected respectively via the extensions to the pivot arm.

14. (Currently amended) ~~The lift axle suspension system of claim 2 further including~~ A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

a mounting bracket rigidly affixed to the frame member;

a first and a second articulating arm each having first and second ends, the first end of each articulating arm being pivotally attached to the mounting bracket, and the second end of each articulating arm being pivotally attached to the axle;

first and second diaphragm chamber assemblies each having therein a movable wall including a flexible bladder; the movable wall dividing the diaphragm chamber assembly into an upper chamber and a lower chamber; the upper chamber being adjustably pressurized to move the movable wall;

a push rod extending from each diaphragm chamber assembly for translating movement of the movable wall whereby the push rod is interconnected to the lift axle suspension system in a manner such that translated movement of the push rod causes pivotal movement of the articulating arms and axle attached thereto; and

an axle connector bracket rigidly affixed to the axle, and the push rod for the first diaphragm chamber is assembly being pivotally connected to the mounting

bracket and the push rod for the second diaphragm chamber is assembly being pivotally connected to the axle connector bracket.

15. (Currently amended) ~~The lift axle suspension system of claim 2 further comprising~~ A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

a mounting bracket rigidly affixed to the frame member;

a first and a second articulating arm each having first and second ends, the first end of each articulating arm being pivotally attached to the mounting bracket, and the second end of each articulating arm being pivotally attached to the axle;

first and second diaphragm chamber assemblies each having therein a movable wall including a flexible bladder; the movable wall dividing the diaphragm chamber assembly into an upper chamber and a lower chamber; the upper chamber being adjustably pressurized to move the movable wall;

a push rod extending from each diaphragm chamber assembly for translating movement of the movable wall whereby the push rod is interconnected to the lift axle suspension system in a manner such that translated movement of the push rod causes pivotal movement of the articulating arms and axle attached thereto; and

an axle connector bracket rigidly affixed to the axle and including a first pair of spaced apart walls in which a first end of the articulating arms are pivotally affixed, and wherein the mounting bracket includes a second pair of spaced apart walls in which a second end of the articulating arms are pivotally affixed.

Claims 16-21 (Canceled)

22. (Currently amended) ~~The lift axle suspension system of claim 21 further including~~ A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface,

the vehicle having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

articulating means pivotally attaching the axle to the vehicle; the articulating means including first and second articulating arms;

a mounting bracket rigidly affixed to the frame member;

the articulating means being pivotally attached to the mounting bracket via a pivotal attachment of each of the articulating arms;

a pair of diaphragm chamber assemblies each including upper and lower chambers divided by a pressure sensitive movable wall comprising a flexible bladder;

a push rod affixed to the movable wall for translating movement of the movable wall;

a pivot arm pivotally connected to a distal end of each push rod whereby the pivot arms are pivotally connected together about one of the pivotal attachments of the articulating arms to the mounting bracket; and

each diaphragm chamber assembly including an air inlet for pressurizing the upper chamber which forces the flexible bladder toward the lower chamber thereby pushing the push rod to pivotally move the articulating means and axle attached thereto.

23. (Currently amended) ~~The lift axle suspension system of claim 21 wherein~~
A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

articulating means pivotally attaching the axle to the vehicle;

mounting means rigidly affixed to the frame member;

the articulating means being pivotally attached to the mounting means;

first and second diaphragm chamber assemblies each including upper and lower chambers divided by a pressure sensitive movable wall comprising a flexible

bladder; the first diaphragm chamber is assembly being mounted in a pivotal manner while the second diaphragm chamber assembly is mounted in a fixed manner;

a push rod affixed to the movable wall for translating movement of the movable wall; and

each diaphragm chamber assembly including an air inlet for pressurizing the upper chamber which forces the flexible bladder toward the lower chamber thereby pushing the push rod, which is interconnected to the articulating means in a manner such that translating movement of the push rod causes pivotal movement of the articulating means and axle attached thereto.

24. (Currently amended) The lift axle suspension system of claim 22 wherein the first diaphragm chamber assembly is rigidly mounted to pivotally mounted first articulating arm, while the second diaphragm chamber assembly is rigidly mounted to the mounting bracket.

25. (Currently amended) The lift axle suspension system of claim 22 wherein the first and second articulating arms include extensions extending beyond the ~~arms~~ pivotal connection of the articulating arms to the mounting bracket and in a direction generally opposite the articulating arm direction toward the axle connection, and where the first and second articulating arms are pivotally connected respectively via the extensions to the pivot arm.

26. (Currently amended) The lift axle suspension system of claim 25 wherein the first diaphragm chamber assembly is rigidly mounted to the mounting bracket while the second diaphragm chamber assembly is rigidly mounted to the pivot arm.

27. (Currently amended) ~~The lift axle suspension system of claim 21 further including~~ A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface.

the vehicle having a longitudinally extending frame member on either side thereof,
said system comprising with respect to each frame member:

articulating means pivotally attaching the axle to the vehicle; the articulating
means including a pair of articulating arms;

a mounting bracket rigidly affixed to the frame member;

the articulating means being pivotally attached to the mounting means;

first and second diaphragm chamber assembly each including upper and
lower chambers divided by a pressure sensitive movable wall comprising a flexible
bladder;

a push rod affixed to each movable wall for translating movement of the
respective movable wall;

each diaphragm chamber assembly including an air inlet for pressurizing the
upper chamber which forces the flexible bladder toward the lower chamber thereby
pushing the push rod, which is interconnected to the articulating means in a manner
such that translating movement of the push rod causes pivotal movement of the
articulating means and axle attached thereto; and

a pivot arm with the first and second diaphragm ~~chambers~~ chamber
assemblies connected thereto, while the push rod for the first diaphragm chamber
assembly is pivotally connected to the mounting bracket and the push rod for the
second diaphragm chamber assembly is pivotally connected to one of the
articulating arms.

28. (Currently amended) The lift axle suspension system of claim 27 wherein the first and second articulating arms include extensions extending beyond the ~~arms~~ pivotal connection of the articulating arms to the mounting bracket and in a direction generally opposite the articulating arm direction toward the axle connection, and where the first and second articulating arms are pivotally connected to the pivot arm.

Claim 29-31 (Canceled)

32. (Currently amended) ~~The method of claim 31~~ A method of selectively raising a vehicle axle and wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said method comprising with respect to each frame member:

pressurizing an upper chamber in each of first and second diaphragm chamber assemblies to move a movable wall in each assembly, each movable wall dividing each diaphragm chamber assembly into the upper chamber and a lower chamber;

translating the movement of the movable walls via respective push rods each having an outer end extending respectively from the diaphragm chamber assemblies;

pivoting ~~of pivot~~ pivot arms connected respectively to a distal the outer end of each push rod and pivotally connected together;

pivoting first and second articulating arms about a first pivot adjacent a first end of each articulating arm and a second pivot adjacent a second end of each articulating arm to lift the vehicle axle to lift the wheel assemblies out of engagement with the road surface; the articulating arms being pivotally attached via the respective first pivots to a mounting bracket rigidly affixed to the vehicle frame and the articulating arms being pivotally attached via the respective second pivots to the axle.

33. (Currently amended) ~~The method of claim 31 wherein~~ A method of selectively raising a vehicle axle and wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said method comprising with respect to each frame member:

pressurizing an upper chamber in each of first and second diaphragm chamber assemblies to move a movable wall in each assembly, each movable wall dividing each diaphragm chamber assembly into the upper chamber and a lower chamber; the first diaphragm chamber is ~~mounted~~ being mounted in a pivotal manner while the second diaphragm chamber is mounted in a fixed manner;

translating the movement of the movable walls via respective push rods each extending respectively from the diaphragm chamber assemblies;

pivoting first and second articulating arms about a first pivot adjacent a first end of each articulating arm and a second pivot adjacent a second end of each articulating arm to lift the vehicle axle to lift the wheel assemblies out of engagement with the road surface; the articulating arms being pivotally attached via the respective first pivots to a mounting bracket rigidly affixed to the vehicle frame and the articulating arms being pivotally attached via the respective second pivots to the axle.

34. (Currently amended) The method of ~~claim 31~~ claim 33 wherein the first diaphragm chamber assembly is rigidly mounted to the pivotally mounted first articulating arm, while the second diaphragm chamber assembly is rigidly mounted to the mounting bracket.

35. (Currently amended) ~~The method of claim 31 wherein~~ A method of selectively raising a vehicle axle and wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said method comprising with respect to each frame member:

pressurizing an upper chamber in each of a pair of diaphragm chamber assemblies to move a movable wall in each assembly, each movable wall dividing each diaphragm chamber assembly into the upper chamber and a lower chamber;

translating the movement of the movable walls via respective push rods each extending respectively from the diaphragm chamber assemblies;

pivoting first and second articulating arms about a first pivot adjacent a first end of each articulating arm and a second pivot adjacent a second end of each articulating arm to lift the vehicle axle to lift the wheel assemblies out of engagement with the road surface; the articulating arms being pivotally attached via the respective first pivots to a mounting bracket rigidly affixed to the vehicle frame and the articulating arms being pivotally attached via the respective second pivots to the

axle; the first and second articulating arms include including extensions extending beyond the arms pivotal connection to the mounting bracket and respective first pivots in a direction generally opposite the arm direction toward the axle connection, and where the first and second articulating arms are pivotally connected respectively via the extensions to the pivot a pivot arm.

36. (Original) The method of claim 35 wherein the first diaphragm chamber is rigidly mounted to the mounting bracket while the second diaphragm chamber is rigidly mounted to the pivot arm.

37. (Currently amended) ~~The method of claim 31 further including a pivot arm with~~
A method of selectively raising a vehicle axle and wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said method comprising with respect to each frame member:

pressurizing an upper chamber in each of a pair of diaphragm chamber assemblies to move a movable wall in each assembly, each movable wall dividing each diaphragm chamber assembly into the upper chamber and a lower chamber;
the first and second diaphragm chambers chamber assemblies being connected thereto, while to a pivot arm;

translating the movement of the movable walls via respective push rods each extending respectively from the diaphragm chamber assemblies;

pivoting first and second articulating arms about a first pivot adjacent a first end of each articulating arm and a second pivot adjacent a second end of each articulating arm to lift the vehicle axle to lift the wheel assemblies out of engagement with the road surface; wherein the articulating arms are pivotally attached via the respective first pivots to a mounting bracket rigidly affixed to the vehicle frame and the articulating arms are pivotally attached via the respective second pivots to the axle; and wherein the push rod for the first diaphragm chamber is pivotally

connected to the mounting bracket and the push rod for the second diaphragm chamber is pivotally connected to one of the articulating arms.

38. (Currently amended) The method of claim 37 wherein the first and second articulating arms include extensions extending beyond the ~~arms-pivotal connection to the mounting bracket and~~ respective first pivots in a direction generally opposite the articulating arm direction toward the axle connection, and where the first and second articulating arms are pivotally connected respectively via the extensions to the pivot arm.

39. (Currently amended) ~~The lift axle suspension system of claim 38 further including axle connector bracket rigidly affixed to the axle, and~~ A method of selectively raising a vehicle axle and wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said method comprising with respect to each frame member:

pressurizing an upper chamber in each of first and second diaphragm chamber assemblies to move a movable wall in each assembly, each movable wall dividing each diaphragm chamber assembly into the upper chamber and a lower chamber;

translating the movement of the movable walls via respective push rods each extending respectively from the diaphragm chamber assemblies;

pivoting first and second articulating arms about a first pivot adjacent a first end of each articulating arm and a second pivot adjacent a second end of each articulating arm to lift the vehicle axle to lift the wheel assemblies out of engagement with the road surface; the articulating arms being pivotally attached via the respective first pivots to a mounting bracket rigidly affixed to the vehicle frame and the articulating arms being pivotally attached via the respective second pivots to the axle; the push rod for the first diaphragm chamber is chamber assembly being pivotally connected to the mounting bracket and the push rod for the second

diaphragm chamber is chamber assembly being pivotally connected to the an axle connector bracket rigidly affixed to the axle.

40. (New) A lift axle suspension system for selectively raising a vehicle axle and raising wheel assemblies attached thereto out of engagement with a road surface, the vehicle having a longitudinally extending frame member on either side thereof, said system comprising with respect to each frame member:

a mounting bracket rigidly affixed to the frame member;

first and second articulating arms each having first and second ends, the first end of each articulating arm being pivotally attached to the mounting bracket, and the second end of each articulating arm being pivotally attached to the axle;

a pair of diaphragm chamber assemblies each having therein a movable wall including a flexible bladder; the movable wall dividing the diaphragm chamber assembly into an upper chamber and a lower chamber; the upper chamber being selectively pressurized to move the movable wall; at least one of the diaphragm chamber assemblies being mounted in a movable manner;

a push rod extending from each diaphragm chamber assembly for translating movement of the movable wall whereby the push rod causes pivotal movement of the articulating arms and axle attached thereto.

41. (New) The system of claim 40 wherein one of the diaphragm chamber assemblies is mounted in a movable manner and the other diaphragm chamber assembly is mounted in a fixed manner.

42. (New) The system of claim 41 wherein each articulating arm includes an extension which extends beyond the pivotal attachment of the articulating arm to the mounting bracket in a direction generally away from the second end of the articulating arm; and wherein the movable diaphragm chamber assembly is mounted to a pivot arm which is pivotally mounted to each of the articulating arm extensions.

43. (New) The system of claim 40 wherein both diaphragm chamber assemblies are mounted in a movable manner.

44. (New) The system of claim 43 wherein the diaphragm chamber assemblies are mounted to a pivot arm which is pivotally mounted to each of the articulating arms.

45. (New) The system of claim 43 wherein the diaphragm chamber assemblies suspended by the push rods.

46. (New) The system of claim 43 wherein the diaphragm chamber assemblies are rigidly attached to one another.

47. (New) The system of claim 46 wherein each articulating arm includes an extension which extends beyond the pivotal attachment of the articulating arm to the mounting bracket in a direction generally away from the second end of the articulating arm; and wherein one of the push rods is pivotally mounted to the mounting bracket and the other push rod is pivotally mounted to one of the articulating arm extensions.

48. (New) The system of claim 46 wherein one of the push rods is pivotally mounted to the mounting bracket and the other push rod is pivotally mounted to an axle connector bracket rigidly affixed to the axle.

49. (New) The system of claim 40 wherein each articulating arm includes an extension which extends beyond the pivotal attachment of the articulating arm to the mounting bracket in a direction generally away from the second end of the articulating arm; and wherein one of the push rods is pivotally mounted to one of the articulating arm extensions.

50. (New) The system of claim 49 wherein at least one of the diaphragm chamber assemblies is mounted to a pivot arm which is pivotally attached to each of the articulating arm extensions.

51. (New) The system of claim 50 wherein the diaphragm chamber assemblies are rigidly mounted to one another.

52. (New) The system of claim 40 wherein one of the push rods is pivotally mounted to the mounting bracket and the other push rod is pivotally mounted to an axle connector bracket rigidly affixed to the axle.

53. (New) The system of claim 52 wherein the diaphragm chamber assemblies are rigidly mounted to one another.

54. (New) The system of claim 53 wherein the diaphragm chamber assemblies suspended by the push rods.